

**AMENDMENTS TO THE CLAIMS:**

Please amend the claims, as indicated below. This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (Currently amended) A method for evaluating customer value to guide loyalty and retention programs comprising:
  - generating, by a processing system, a hazard function model based on attributes relating to a plurality of current customer accounts;
  - generating, by the processing system, a hazard function for ~~[[an]]~~ a first existing customer, to determine probability of churn, based on the hazard function model and account data associated with the first existing customer and corresponding to the attributes;
  - calculating a gain in lifetime value for the first existing customer based on a change in the hazard function resulting from a retention effort;
  - and
  - determining a focus for retention-based interactions with the first existing customer based on at least ~~one of the hazard function and gain in lifetime value~~, wherein determining ~~[[a]]~~ the focus comprises clustering the hazard function for the first existing customer and hazard functions for a plurality of other existing customers so that the hazard functions are grouped together according to shape, each group representative of a customer set.

2. (Currently amended) The method of claim 1, wherein calculating the gain in lifetime value includes:
  - calculating a lifetime value based on original contract terms and revenue associated with the first existing customer; and
  - calculating the gain in lifetime value based on a change in the hazard function resulting from a new contract period.
3. (Currently amended) The method of claim 1, wherein determining [[a]] the focus for retention-based interactions with the first existing customer includes:
  - analyzing the shape of the hazard function generated for the first existing customer; and
  - specifying a set of marketing techniques based on the shape of the hazard function.
4. (Currently amended) The method of claim 1, wherein determining [[a]] the focus for retention-based interactions with the first existing customer includes:
  - specifying a set of incentives to offer the first existing customer based on the gain in lifetime value.
5. (Original) The method of claim 3, wherein specifying the set of marketing techniques based on the shape includes:
  - determining, based on the shape of the hazard function, there is no effect on churn of a contract expiration.

6. (Original) The method of claim 5, wherein specifying the set of marketing techniques includes:  
  
taking no further steps to deter churn.
7. (Original) The method of claim 3, wherein specifying the set of marketing techniques based on the shape includes:  
  
determining, based on the shape of the hazard function, that there is a  
  
small increase in probability of churn at contract expiration, with an  
  
elevated post-expiration churn.
8. (Original) The method of claim 7, wherein specifying the set of marketing techniques includes:  
  
having a moderate pre-expiration effort where new contracts or continued  
  
contracts are the goal.
9. (Previously presented) The method of claim 3, wherein specifying the set of marketing techniques based on the shape includes:  
  
determining, based on the shape of the hazard function, that there is a  
  
large spike indicating high probability of churn at contract expiration  
  
and low probability of churn thereafter.
10. (Original) The method of claim 9, wherein specifying the set of marketing techniques includes:

concentrating effort on pre-expiration of contract where a contract renewal may not be required.

11. (Original) The method of claim 3, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a large increase in probability of churn at expiration with high and increasing post-expiration probability of churn.

12. (Currently amended) The method of claim 11, wherein specifying the set of marketing techniques includes:

specifying a high intensity pre-expiration effort with continued competitive offers to maintain the first existing customer.

13. (Currently amended) The method of claim 4, wherein specifying the incentives includes:

determining that a value of the set of incentives offered to the first existing customer does not exceed the gain in lifetime value.

14. (Cancelled).

15. (Currently amended) The method of claim 1, wherein determining [[a]] the focus for retention-based interactions with the first existing customer includes:

determining, based on the overall shape of the clustered hazard functions,  
a focus for retention-based interactions for each customer set.

16. (Currently amended) An apparatus for evaluating customer value to guide loyalty and retention programs comprising:

a computer, comprising:

- a first calculating ~~module~~ component for generating a hazard function model based on attributes relating to a plurality of current customer accounts;
- a generating ~~module~~ component for generating a hazard function for ~~[[an]]~~ a first existing customer, to determine probability of churn, based on the hazard function model and account data associated with the first existing customer and corresponding to the attributes;
- a second calculating ~~module~~ component for calculating a gain in lifetime value for the first existing customer based on a change in the hazard function resulting from a retention effort;
- a determining ~~module~~ component for determining a focus for retention-based interactions with the first existing customer based on at least ~~one of the hazard function and the gain in lifetime value~~;

a clustering ~~module~~ component for clustering the hazard function for the first existing customer and hazard functions for a plurality of other existing customers so that the hazard functions are grouped together according to shape, each group representative of a customer set[.]; and

a display device displaying at least one of the hazard function, the gain in lifetime value for the first existing customer, and the focus for retention-based interactions with the first existing customer.

17. (Currently amended) The apparatus of claim 16, wherein the second calculating ~~module~~ component for calculating the gain in lifetime value calculates a lifetime value based on original contract terms and revenue associated with the first existing customer; and calculates the gain in lifetime value based on a change in the hazard function resulting from a new contract period.

18. (Currently amended) The apparatus of claim 16, wherein the determining ~~module~~ component includes:
- an analyzing ~~module~~ component for analyzing the shape of the hazard function generated for the first existing customer; and
- a specifying ~~module~~ component for specifying a set of marketing techniques based on the shape of the hazard function.

19. (Currently amended) The apparatus of claim 16, wherein the determining ~~module~~ component includes:
- a specifying ~~module~~ component for specifying a set of incentives to offer the first existing customer based on the gain in lifetime value.
20. (Currently Amended) The apparatus of claim 18, wherein the specifying ~~module~~ component for specifying the set of marketing techniques based on the shape includes:
- a determining ~~module~~ component for determining, based on the shape of the hazard function, there is no effect on churn of a contract expiration.
21. (Currently amended) The apparatus of claim 20, wherein the specifying ~~module~~ component specifies taking no further steps to deter churn.
22. (Currently amended) The apparatus of claim 18, wherein the specifying ~~module~~ component for specifying the set of marketing techniques based on the shape includes:
- a determining ~~module~~ component for determining, based on the shape of the hazard function, that there is a small increase in probability of churn at contract expiration, with an elevated post-expiration churn.

23. (Currently amended) The apparatus of claim 22, wherein the specifying ~~module~~ component specifies a moderate pre-expiration effort where new contracts or continued contracts are the goal.
24. (Currently amended) The apparatus of claim 18, wherein the specifying ~~module~~ component for specifying the set of marketing techniques based on the shape includes:  
a determining ~~module~~ component for determining, based on the shape of the hazard function, that there is a large spike indicating high probability of churn at contract expiration and low probability of churn thereafter.
25. (Currently presented) The apparatus of claim 24, wherein the specifying ~~module~~ component specifies concentrating effort on pre-expiration of contract where a contract renewal may not be required.
26. (Currently amended) The apparatus of claim 18, wherein the specifying ~~module~~ component for specifying the set of marketing techniques based on the shape includes:  
a determining ~~module~~ component for determining, based on the shape of the hazard function, that there is a large increase in probability of churn at expiration with high and increasing post-expiration probability of churn.



27. (Currently amended) The apparatus of claim 26, wherein the specifying ~~module~~ component specifies a high intensity pre-expiration effort with continued competitive offers to maintain the first existing customer.
28. (Currently amended) The apparatus of claim 19, wherein the specifying ~~module~~ component includes a determining ~~module~~ component for determining that a value of the set of incentives does not exceed the gain in lifetime value.
29. (Cancelled).
30. (Currently amended) The apparatus of claim 16, wherein the determining ~~module~~ component determines, based on the overall shape of the clustered hazard functions, a focus for retention-based interactions for each customer set.
31. (Currently amended) A computer-readable medium including instructions, executable by a processor, for performing a method for evaluating customer value to guide loyalty and retention programs, the method comprising:
- generating a hazard function model based on attributes relating to a plurality of current customer accounts;
  - generating a hazard function for ~~[[an]]~~ a first existing customer, to determine probability of churn, based on the hazard function model and account data associated with the first existing customer and corresponding to the attributes;

calculating a gain in lifetime value for the first existing customer based on a change in the hazard function; and  
determining a focus for retention-based actions based on at least ~~one of~~ the hazard function ~~and gain in lifetime value~~, wherein determining ~~the~~ the focus comprises clustering the hazard function for the first existing customer and hazard functions for a plurality of other existing customers so that the hazard functions are grouped together according to shape, each group representative of a customer set.

32. (Currently amended) The computer-readable medium of claim 31, wherein calculating the gain in lifetime value includes:

calculating a lifetime value based on original contract terms and revenue associated with the first existing customer; and  
calculating the gain in lifetime value based on a change in the hazard function resulting from a new contract period.

33. (Currently amended) The computer-readable medium of claim 31, wherein determining ~~the~~ the focus for retention-based actions includes:

analyzing the shape of the hazard function generated for the first existing customer; and  
specifying a set of marketing techniques based on the shape of the hazard function.

34. (Currently amended) The computer-readable medium of claim 31, wherein determining ~~[[a]]~~ the focus for retention-based actions includes:  
specifying a set of incentives offered to the first existing customer based on the gain in lifetime value.
35. (Original) The computer-readable medium of claim 33, wherein specifying the set of marketing techniques based on the shape includes:  
determining, based on the shape of the hazard function, there is no effect on churn of a contract expiration.
36. (Original) The computer-readable medium of claim 35, wherein specifying the set of marketing techniques includes:  
taking no further steps to deter churn.
37. (Original) The computer-readable medium of claim 33, wherein specifying the set of marketing techniques based on the shape includes:  
determining, based on the shape of the hazard function, that there is a small increase in probability of churn at contract expiration, with an elevated post-expiration churn.
38. (Original) The computer-readable medium of claim 37, wherein specifying the set of marketing techniques includes:

having a moderate pre-expiration effort where new contracts or continued contracts are the goal.

39. (Previously presented) The computer-readable medium of claim 33, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a large spike indicating high probability of churn at contract expiration and low probability of churn thereafter.

40. (Original) The computer-readable medium of claim 39, wherein specifying the set of marketing techniques includes:

concentrating effort on pre-expiration of contract where a contract renewal may not be required.

41. (Original) The computer-readable medium of claim 33, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a large increase in probability of churn at expiration with high and increasing post-expiration probability of churn.

42. (Currently amended) The computer-readable medium of claim 41, wherein specifying the set of marketing techniques includes:

specifying a high intensity pre-expiration effort with continued competitive offers to maintain the first existing customer.

43. (Previously presented) The computer-readable medium of claim 34, wherein specifying the incentives includes:

determining that a value of the set of incentives does not exceed the gain in lifetime value.

44. (Cancelled).

45. (Currently amended) The computer-readable medium of claim 31, wherein determining ~~[[a]]~~ the focus for retention-based actions includes:

determining, based on the overall shape of the clustered hazard functions, a focus for retention-based actions for each customer set.

46. (Currently amended) A system for evaluating customer value to guide loyalty and retention programs comprising:

means for generating a hazard function model based on attributes relating to a plurality of current customer accounts;

means for generating a hazard function for ~~[[an]]~~ a first existing customer, to determine probability of churn, based on the hazard function model and account data associated with the first existing customer and corresponding to the attributes;

means for calculating a gain in lifetime value for the first existing customer  
based on a change in the hazard function;  
means for determining a focus for retention-based actions based on at  
least ~~one of the hazard function; and the gain in lifetime value; and~~  
means for clustering the hazard function for the first existing customer and  
hazard functions for a plurality of other existing customers so that  
the hazard functions are grouped together according to shape,  
each group representative of a customer set[[]]; and  
means for displaying at least one of the hazard function, the gain in  
lifetime value for the first existing customer, and the focus for  
retention-based actions.

47. (Currently amended) The system of claim 46, wherein the means for  
calculating the gain in lifetime value includes:  
means for calculating a lifetime value based on original contract terms and  
revenue associated with the first existing customer; and  
means for calculating the gain in lifetime value based on a change in the  
hazard function resulting from a new contract period.
48. (Currently amended) The system of claim 46, wherein the means for  
determining includes:  
means for analyzing the shape of the hazard function generated for the  
first existing customer; and

means for specifying a set of marketing techniques based on the shape of the hazard function.

49. (Currently amended) The system of claim 46, wherein the means for determining includes:

means for specifying a set of incentives to offer the first existing customer based on the gain in lifetime value.

50. (Previously presented) The system of claim 48, wherein the means for specifying the set of marketing techniques based on the shape includes:

means for determining, based on the shape of the hazard function, that there is no effect on churn of a contract expiration.

51. (Previously presented) The system of claim 50, wherein the means for specifying the set of marketing techniques specifies taking no further steps to deter churn.

52. (Previously presented) The system of claim 48, wherein the means for specifying the set of marketing techniques based on the shape includes:

means for determining, based on the shape of the hazard function, that there is a small increase in probability of churn at contract expiration, with an elevated post-expiration churn.

53. (Previously presented) The system of claim 52, wherein the means for specifying the set of marketing techniques specifies a moderate pre-expiration effort where new contracts or continued contracts are the goal.
54. (Previously presented) The system of claim 48, wherein the means for specifying the set of marketing techniques based on the shape includes:  
means for determining, based on the shape of the hazard function, that  
there is a large spike indicating high probability of churn at contract expiration and low probability of churn thereafter.
55. (Previously presented) The system of claim 54, wherein the means for specifying the set of marketing techniques specifies concentrating effort on pre-expiration of contract where a contract renewal may not be required.
56. (Currently amended) The system of claim 48, wherein the means for specifying the set of marketing techniques based on the shape includes:  
means for determining, based on the shape of the hazard function, that  
there is a large increase in probability of churn at expiration with  
high and increasing post-expiration probability of churn.



57. (Currently amended) The system of claim 56, wherein the means for specifying the set of marketing techniques specifies a high intensity pre-expiration effort with continued competitive offers to maintain the first existing customer.
58. (Previously presented) The system of claim 49, wherein the means for specifying the incentives includes:  
means for determining that a value of the set of incentives does not exceed the gain in lifetime value.
59. (Cancelled).
60. (Currently amended) The system of claim 46, wherein the means for determining ~~[[a]]~~ the focus for retention-based actions includes:  
means for determining, based on the overall shape of the clustered hazard functions, a focus for retention-based actions for each customer set.
61. (Currently amended) A method for evaluating customer value to guide loyalty and retention programs comprising:  
generating, by a multilayer feed-forward neural network, a hazard function for ~~[[an]]~~ a first existing customer, to determine probability of churn,

based on account data associated with the first existing customer  
and corresponding to a set of attributes;  
calculating, for the first existing customer, a gain in lifetime value based on  
a change in the hazard function resulting from a retention effort;  
and  
determining a focus for a retention-based program based on at least one  
~~of the hazard function and the gain in lifetime value~~, wherein  
determining ~~[[a]]~~ the focus comprises clustering the hazard function  
for the first existing customer and hazard functions for a plurality of  
other existing customers so that the hazard functions are grouped  
together according to shape, each group representative of a  
customer set.

62. (Currently amended) The method of claim 61 further comprising:  
implementing the ~~program~~ programs based on the determined focus.

63. (Currently amended) A method for evaluating customer value to guide  
loyalty and retention programs comprising:  
generating, by a processing system and for each of a plurality of  
customers, a hazard function to determine a probability of churn for  
each customer, the hazard function based on attributes relating to  
customer account information;

identifying a temporal-based retention effort based on the hazard function  
for each of the plurality of customers;  
calculating, for each of the plurality of customers, an expected gain in  
value from the identified retention effort; and  
determining a focus for customer interaction based on the expected gain  
in value, wherein determining [[a]] the focus comprises clustering  
the hazard function for ~~the customer and hazard functions for a~~  
~~plurality of other existing customers~~ each of the plurality of  
customers so that the hazard functions are grouped together  
according to shape, each group representative of a customer set.

64. (Currently amended) The method of claim 63, wherein generating [[a]] the  
hazard function comprises:

generating [[a]] the hazard function, based on a reference hazard function  
model, for each of the plurality of customers.

65. (Previously presented) The method of claim 63, wherein the temporal-based  
retention effort comprises retention actions directed to each customer during a  
first time period and retention actions directed to each customer during a second  
time period occurring after the first time period.

66. (Currently amended) The method of claim 1, wherein calculating [[a]] the gain in lifetime value ~~based on a change in the hazard function resulting from a retention effort~~ comprises calculating expected revenue multiplied by an increase in remaining lifetime resulting from the retention effort.
67. (Currently amended) The method of claim 16, wherein the second calculating ~~module~~ component calculates the gain in lifetime value ~~based on a change in the hazard function resulting from a retention effort~~ by calculating expected revenue multiplied by an increase in remaining lifetime resulting from the retention effort.
68. (Currently amended) The computer-readable medium of claim 31, wherein calculating [[a]] the gain in lifetime value ~~based on a change in the hazard function~~ comprises calculating expected revenue multiplied by an increase in remaining lifetime resulting from a retention effort.
69. (Previously presented) The system of claim 46, wherein the means for calculating a gain in lifetime value calculates the gain in lifetime value based on a change in the hazard function by calculating expected revenue multiplied by an increase in remaining lifetime resulting from a retention effort.
70. (Previously presented) The method of claim 61, further comprising:

training the neural network to generate a hazard function model based on account data associated with a plurality of current customer accounts and corresponding to the set of attributes; and wherein generating a hazard function includes generating a hazard function for an existing customer, to determine probability of churn, based on the hazard function model and the account data associated with the customer and corresponding to a set of attributes.

71. (Previously presented) The method of claim 70, wherein training the neural network comprises loading an input layer of the neural network with values representing the set of attributes for the plurality of current customer accounts.